

REMARKS

Pending Claims:

In this application, claims 1-11, and 13-14 are currently pending. Claims 2-10 have not be altered since filing. Claim 1 is amended by this Response. Claim 12 has been cancelled. Claims 13 and 14 have been added. Entry of these amendments is respectfully requested.

Drawings:

The drawings submitted with the application were objected to in the Office Action. The Applicant has submitted replacement drawings for this application along with this Response. These replacement drawings meet the objections to the drawings set forth in the Office Action.

Amendments to the Specification:

Three typographical errors in the Specification are corrected in the above amendments.

Rejection under 35 U.S.C. §103

The Examiner has rejected claims 1-12 as being obvious in light of Scarlat, U.S. Patent No. 6,477,482. Scarlat discloses a plurality of remotely loaded servers for simulating actual traffic patterns at a transactional server across a network, and running the network under loads to analyze system performance. Scarlat also teaches the monitoring of server performance at selected times under normal traffic loads. The Examiner acknowledges that Scarlat does not specify that the goal should be determined from the previous simulation test. Nonetheless, the Examiner presents the argument that, absent a showing of synergistic effect or unexpected results, the claimed invention is obvious because Scarlat teaches a load test during development and because Scarlat allows for test implementation on a live network.

The applicant also takes note of prior art systems for the testing storage data networks. In one such system, a particular node on the network (such as a router) could run a self-test, or could share its internally maintained statistics with a central management computer. The central computer could track these statistics over time, and therefore could detect problems at that node. The problem of this prior art approach is

that statistics for a particular device may not give any indication of a problem with another device in the network. The present application is concerned with monitoring and maintaining traffic flow from one site to another across a network, and this prior art approach may not give any indication of a problem with the traffic flow. This is because the nodes in a particular network can appear to function properly, even when data throughput over a wide area network is being compromised or when the data itself is compromising the network (such as with aberrant data patterns within the traffic flows).

Another type of test in the prior art was the pushing of data across the wide area network. An example of this type of test is described in the document entitled "IP Network Assessment Service" which is included in the information disclosure statement filed with this Response. This test could be run at a network installation, or when a problem has been detected in the network. Unlike the present invention, this test was not remotely monitored or controlled.

In response to the rejection in the office action, the applicant has amended claim 1 to better define the present invention. Claim 1 now requires that the benchmark test results relate to "data storage traffic from a first site passing over a wide area network to a second site." These results are electronically forwarded to a remote services site. The remote services site also periodically receives operational-testing results based on sample data "sent from the first site to the second site over the wide area network" while the computer network is "carrying live data storage traffic."

None of the prior art teaches or suggests the invention of amended claim 1. By creating a benchmark test relating to data storage traffic passing over the wide area network and comparing this benchmark to periodically taken tests of sample data while the network carries live data, the remote services site is able to detect deviations in performance and degradations over time. By performing operational testing at regular intervals (claims 9 and 10), the remote services site is assured of detecting significant degradations in performance (relative to the benchmark) before such problems are significant enough to be noticeable to end users. Additionally, the present invention is able to attach the sample data to the live data storage traffic (claim 13). The remote service is able to align the performance degradation with data-specific anomalies such as aberrant data patterns, which cannot be definitively duplicated in simulated traffic generation testing, since they are predominantly the product of the host application or

some other entity that manipulates the data prior to it being placed on the network. In this way, the remote services site is able to detect a problem with a storage data network and issue prompt notifications of problem. In addition, should the data flows themselves be drawing out a network deficiency that otherwise could not be isolated, the remote services site is able to correlate the problem with the exact data flows from the host applications. These elements are not taught or suggested in the prior art.

Scarlat teaches only the load testing of a transactional server from a remote location. Whether the transactional server is a web server, part of a client/server system, or other transactional systems (see col. 3, lines 27-36), the teaching of Scarlat is the same. Specifically, Scarlet creates one or more load testing servers at a remote location, and then load tests the transactional server(s) through algorithms running on the testing servers. The results of the load test are determined by the responsiveness of the transactional server as determined by watching the responses returned to the load testing servers. The teachings of Scarlat could not be used to remotely test the ability of a computer network to send storage data from a first site across a wide area network to a second site as defined in claim 1. There is no transactional server in this environment to create the responses required by Scarlat to analyze the test. Furthermore, Scarlat teaches that the receipt and analysis of the test results occurs at the same location from which the test data is sent (i.e., the hosted load testing service). Claim 1 defines an invention where the test data is sent from a first site to a second site, and where the results are returned to a remote services site that is separate from the first and second sites. Finally, the claimed requirement of periodic operational-testing by comparing results against a benchmark is not found in the prior art. Simply because Scarlat teaches a load test during development does not mean that Scarlat contemplates periodic operational testing against a benchmark. Scarlat teaches nothing about how a load test would be implemented on a live network for comparison purposes, or how this could be compared to a benchmark. Scarlat contemplates only the implementation of a stress test that can simulate tens or hundreds of thousands of concurrent users. See Scarlat, abstract. If such a load test were repeated on a live network that already had tens or hundreds of thousands of users, the network performance would clearly deteriorate as a direct result of the test. The comparison with the previous benchmark would not produce useful results, and would not allow the test to “determine network degradation.”

While not a requirement for patentability, the Examiner suggested examining the "synergistic" effect of the claimed combination. The synergistic effect from the presently claimed invention is found in the fact that no prior art system would detect a problem over the network until the performance degradation is noticeable to end users, while the present invention can use its ability to analyze the network as a whole and compare operational results against the benchmark to create an early notification of a slight degradation in performance. This ability can save storage network users down time and productivity losses. Furthermore, since Scarlet does not teach the receipt and analysis of test results from outside the tested network, Scarlet would require that the load testing service be recreated on every network to be tested. In contrast, the present invention could test many networks (see Figure 3) from a single remote services site. For these reasons, claim 1 and dependent claims 2-11 should be considered patentable over the prior art.

CONCLUSION

All of the claims remaining in this application should now be seen to be in condition for allowance. The prompt issuance of a notice to that effect is solicited.

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